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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,616	02/13/2002	Silvano Gai	112025-0482	7341

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EXAMINER
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FILIPCZYK, MARCIN R

ART UNIT	PAPER NUMBER
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2163

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/074,616

Applicant(s)

GAI ET AL.

Examiner

Marc R. Filipczyk

Art Unit

2163

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 8 and 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-12 and 21-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Action is responsive to Applicant's RCE request and amendment filed on August 25, 2006.

To expedite the process of examination Examiner requests that all future correspondences in regard to overcoming prior art rejections or other issues (e.g. amendments, 35 U.S.C. 112, objections and the like) set forth by the Examiner that Applicants provide and link to the most specific page and line numbers of the disclosure where the best support is found (see 35 U.S.C. 132).

#### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/25/06 has been entered.

Claims 1-7, 9-12 and 21-41 are pending.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the **second paragraph** of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 2163

Regarding claims 7-12, the segment "the second memory device" is indefinite. It is not clear what the second memory device is, further it is not clear how it is integrated with the rest of the system.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-7, 9-12 and 21-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fritchman (U.S. Patent No 6,785,677) in view of Sherman (U.S. Patent No. 6,389,507).**

Regarding claims 1; 2 and 6, Fritchman discloses a method for programming a pattern matching engine having a plurality of information storage entries with one or more regular expressions (fig. 2, block 20), each regular expression including a plurality of characters and having a corresponding action to be applied to matching strings, the method comprising the steps of:

identifying one or more borders within a given regular expression, the one or more borders separating the given regular expression into a plurality of sub-expressions, at least one sub-expression having a plurality of sequential characters (figs. 3A-3C); and

Art Unit: 2163

loading one or more entries of the pattern matching engine with a plurality of the sequential characters from at least one sub-expression, (fig. 2, block 21, PATTERN; *preprocessing pattern string*); wherein

the borders are defined by a predetermined sequence of regular expression metacharacters, the metacharacters being wildcards (col. 7, Table; “\_” and “%”, Fritchman);

executing the corresponding action based on a match (abstract and col. 8, lines 12-24), but does not expressly teach that the search engine has a content addressable memory (CAM) or processing in parallel.

Sherman teaches a search engine using a ternary CAM to store data for pattern matching to process in parallel (abstract and fig. 3, Sherman). One of the benefits of a CAM is allowing program access to and from the memory (CAM). Note, Fritchman uses a program to access the memory system's content (abstract, Fritchman) and Sherman processes comparisons in parallel (fig. 3 and col. 7, lines 27-37, Sherman). Hence, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to store Fritchman's data in a CAM since Fritchman's memory system supports and enables program interaction (abstract, Fritchman). One would have been motivated to combine the two pattern matching systems because both systems are compatible by supporting program access to memory and Fritchman system would benefit from the format advantages of using a ternary CAM to process data faster, in parallel.

Regarding claim 3, Fritchman/Sherman disclose organizing at least part of the pattern matching engine into a plurality of sections, and wherein each section of the pattern matching

Art Unit: 2163

engine is loaded with a plurality of search patterns for a corresponding sub-expression (fig. 2, block 21 and figs. 3A-3C, Fritchman).

Regarding claim 4, Fritchman/Sherman disclose one of the search patterns includes a complete match of the respective sub-expression, a search pattern that includes a partial match of the respective sub-expression, and a mismatch pattern (fig. 2, block 22, Fritchman).

(Note: each pattern has a complete match, partial match and mismatch depending on the target string)

Regarding claim 5, Fritchman/Sherman disclose associating at least one sub-expression with a current variable (figs. 4A-4C, Fritchman); and

loading the associated current state variable into each entry of the section of the pattern matching engine that contains the at least one sub-expression (fig. 2, blocks 22 and 23; TARGET *matched strings*, and figs. 4A-4C, Fritchman) .

Regarding claim 7, Fritchman/Sherman teach the CAM is a ternary CAM (fig. 3, Sherman) that supports don't care values (col. 7, table; *wildcards*, Fritchman), and

the mismatch pattern includes don't care values (fig. 2, block 22, TARGET; values RS, Fritchman).

Regarding claim 21, Fritchman/Sherman disclose the regular expression is associated with an action (fig. 2, prefix, suffix, Fritchman),

Art Unit: 2163

pattern matching engine (fig. 3 and col. 6, lines 27-46, Sherman) including at least a first and second memory (fig. 3, *TCAM* and *SRAM* and *DCAM*, Sherman) with entries,

and that the second memory's entries are loaded with actions (fig. 3, *associated data*, Sherman) associated with one regular expression.

Regarding claims 9-12 and 22-41, they comprise the same subject matter as claims 1-7 and 21 rejected above, and are therefore rejected on the same merits.

### ***Response to Arguments***

Applicant's arguments filed August 25, 2006 have been fully considered but they are not persuasive. The arguments and responses are listed below.

Applicant argues on pages 12-15 of the 8/25/06 response that the submitted amendment is believed to have overcome the rejections and objections.

Examiner disagrees. Applicant has addressed all the issues raised by the office however newly submitted claims and amendments rendered new rejections under 35 U.S.C. 112.

Applicant argues on pages 17 and 18 of the 8/25/06 response that Fritchman/Sherman do not teach parallel operation on network messages.

Examiner disagrees. Fritchman/Sherman teach parallel operations using CAM structure (Sherman, Summary and fig. 3 and col. 7, lines 27-37). Note, Sherman's CAM system is

Art Unit: 2163

externally accessed therefore Fritchman/Sherman teach parallel operations using CAM system on a network.

With respect to all the pending claims 1-7, 9-12 and 21-41 Examiner respectfully traverses Applicant's assertion based on the discussion and rejection cited above.

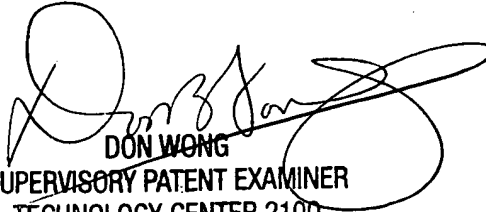
### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc R. Filipczyk whose telephone number is (571) 272-4019. The examiner can normally be reached on Mon-Fri, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MF  
September 29, 2006

  
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SUPERVISORY PATENT EXAMINER  
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